MYCOTAXON

Volume 107, pp. 449–454 *January–March 2009*

Micromycetes on *Austrocedrus chilensis*. First record of *Rebentischia* from Argentina

M. Virginia Bianchinotti & Romina M. Sánchez

vbianchi@uns.edu.ar & rsanchez@uns.edu.ar
Lab. Ficología y Micología, DBByF, Universidad Nacional del Sur
LEBBAH, CERZOS (CONICET), C.C. 738, (8000) Bahía Blanca, Argentina

Abstract — *Rebentischia massalongii* was collected growing on twigs from *Austrocedrus chilensis*. So far known only from the temperate zone of Europe and North America, this species is reported for the first time from Argentina and the Southern Hemisphere. The type specimen of *R. costi*, a species described from Brazil, was re-examined and is here considered an authentic species. A key to the accepted species of *Rebentischia* is provided.

Key words — ascomycetes, *Cupressaceae*, Patagonian forests, *Tubeufiaceae*

Introduction

Austrocedrus chilensis (D. Don.) Pic. Serm. & Bizarri, is an endemic *Cupressaceae* from southern Argentina and Chile. This conifer is widely distributed in the andinopatagonian forests, where it forms pure and mixed stands with *Nothofagus* spp. This tree is highly appreciated for its beauty and the qualities of its wood (Greslebin et al. 2005).

Few ascomycetes have been recorded on *A. chilensis* (Table 1). During our survey of microfungi on this host, we found *Rebentischia massalongii*. This species was known only from the temperate zone of Europe and North America and is here reported from Argentina and the Southern Hemisphere for the first time.

Rebentischia P. Karst. belongs in the *Tubeufiaceae* M.E. Barr. This family of bitunicate ascomycetes was created by Barr (1979) and it is considered a monophyletic clade within the *Pleosporales* (Kodsueb et al. 2006.). The *Tubeufiaceae* is rich in genera and species (see Rossman 1987), but it is still little known (Tsui et al. 2006). Most members are tropical but a few, like *Rebentischia*, appear also in temperate zones.

Barr (1980) revised *Rebentischia* and accepted two species: *R. massalongii* (= *R. pomiformis*, the generic type), which grows on branches and trunks of various woody plants, and *R. unicaudata* (Berk. & Broome) Sacc., which

appears on stems of shrubs and vines. Ahn & Shearer (1999) have since added a third species from *Abies*, *R. abietis* (Fautrey) Ahn & Shearer.

The only species of *Rebentischia* known for the Southern Hemisphere was one described from Brazil, *R. costi,* which Barr (1980) did not study.

The objectives of this paper are to expand the distribution of *Rebentischia* and to give a taxonomic opinion on *R. costi*, reexamining the type material for this purpose. We consider *R. costi* an authentic, separate species and provide a key to the now four accepted *Rebentischia* species.

Materials and methods

Twigs and bark samples of *Austrocedrus chilensis* were collected in Parque Nacional Los Alerces (Argentina) in the spring of 2006. Samples were air-dried and are preserved in Bahía Blanca Biología Herbarium (BBB). The URM Herbarium provided type material of *Rebentischia costi*. Herbarium materials were rehydrated in tap water. Sections were hand-made with a razor blade and were mounted in tap water or in 5% KOH with phloxine. All measurements were made in water. Herbarium abbreviations follow Holmgren et al. (1990).

Table 1. List of ascomycetes previously recorded on *Austrocedrus chilensis*

Species	Substrate	Reference
Aspergillus sp.		Minter & Peredo López 2006
Appendiculella austrocedri Butin	leaves	Butin & Peredo 1986
Botryotinia fuckeliana (de Bary) Whetzel	cones	Gamundí et al. 2004
Caliciopsis cochlearis Butin	bark, leaves	Butin & Peredo 1986
Caliciopsis pinea Peck	leaves	Minter & Peredo López 2006
Cladosporium sp.		Minter & Peredo López 2006
Didymella sp.		Minter & Peredo López 2006
Epicoccum purpurascens Ehrenb.		Minter & Peredo López 2006
Hysterium andinense Messuti & Lorenzo	bark	Messuti & Lorenzo 1997
Lophodermium juniperinum (Fr.) De Not.	cones, leaves	Gamundí et al. 2004
Lophodermium sp.	leaves	Gamundí et al. 2004
Mycosphaerella sp.		Gamundí et al. 2004
Morchella sp.		Gamundí et al. 2004
Thyridium sp.		Gamundí et al. 2004

Results and discussion

Rebentischia massalongii (Mont.) Sacc.,
Nuovo Giorn. Bot. Ital. 8: 12. 1876, [as *'massalongi'*]. Figures 1–9

≡ *Sphaeria massalongii* Mont., Syll. Gen. Sp. Crypt.: 237. 1856, [as *'massalongi'*].

= *Rebentischia pomiformis* P. Karst., Fungi Fenniae Exsiccati No. 881. 1869.

FIGURES 1–9. *Rebentischia massalongii* (from MVB-RS 205, deposited in BBB). 1. Sectioned ascoma (arrow) immersed on bark of *Austrocedrus chilensis*. 2. Longitudinal section. 3. Peridium. 4–5. Asci. Arrow points to a 5-septate ascospore. 6–7. Immature ascospores. 8–9. Mature ascospores.
Bars: 1 = 250 µm. 2 = 100 µm. 3–8 = 10 µm. 9 = 20 µm.

Ascomata at first immersed, then erumpent, separate, globose, 200–250 × 225–250 µm ($\overline{x}$ = 225 × 237). Peridium soft, fleshy, lateral walls 35–50 µm wide, composed of thick walled, dark brown to vinaceous cells, forming textura angularis, 4–7 × 3–7 µm ($\overline{x}$ = 6.5 × 4.8). Pseudoparaphyses cellular, anastomosing, narrow, 1–2 µm diam., forming an intricate net. Asci bitunicate, claviform 8–spored, 87.5–112.5 × 17.5–30 µm ($\overline{x}$ = 102 × 22). Ascospores narrowly clavate, slightly curved, rounded at the apex, tapering to base, at first hyaline, then dull brown to light vinaceous brown, 4–5-septate, 22.5–31.6 × 7.5–10.2 µm ($\overline{x}$ = 27.4 × 8.7), the primary septum forms near base delimiting a hyaline basal cell, with an elongate, setiform base, 9.2–15.3 µm long. ($\overline{x}$ = 11.9), median cells more pigmented than upper cells, smooth.

Distribution — Europe (Austria, Czech Republic, Finland, France, Germany, Slovak Republic, Sweden, Switzerland); North America (USA); South America (Argentina).

Specimens Examined — **ARGENTINA.** Chubut: Parque Nac. Los Alerces (71°43'51"W 42°46'18"S) — on twigs and bark of *Austrocedrus chilensis,* coll. Bianchinotti & Sánchez *205*, 24.X.2006 (*BBB*).

Comments — Our collection is similar to that described by Barr (1980) as up to 495 µm diam, but the ascomata are smaller. *Rebentischia massalongii* had been recorded only from a few localities of the northeastern United States and various countries of Europe (Farr et al. 2008, Mathiassen & Økland 2007). *Rebentischia massalongii* is an uncommon saprobe (Réblová & Svrček 1997) that is often found growing in association with old cankers. This is the first record on a host in the *Cupressaceae.*

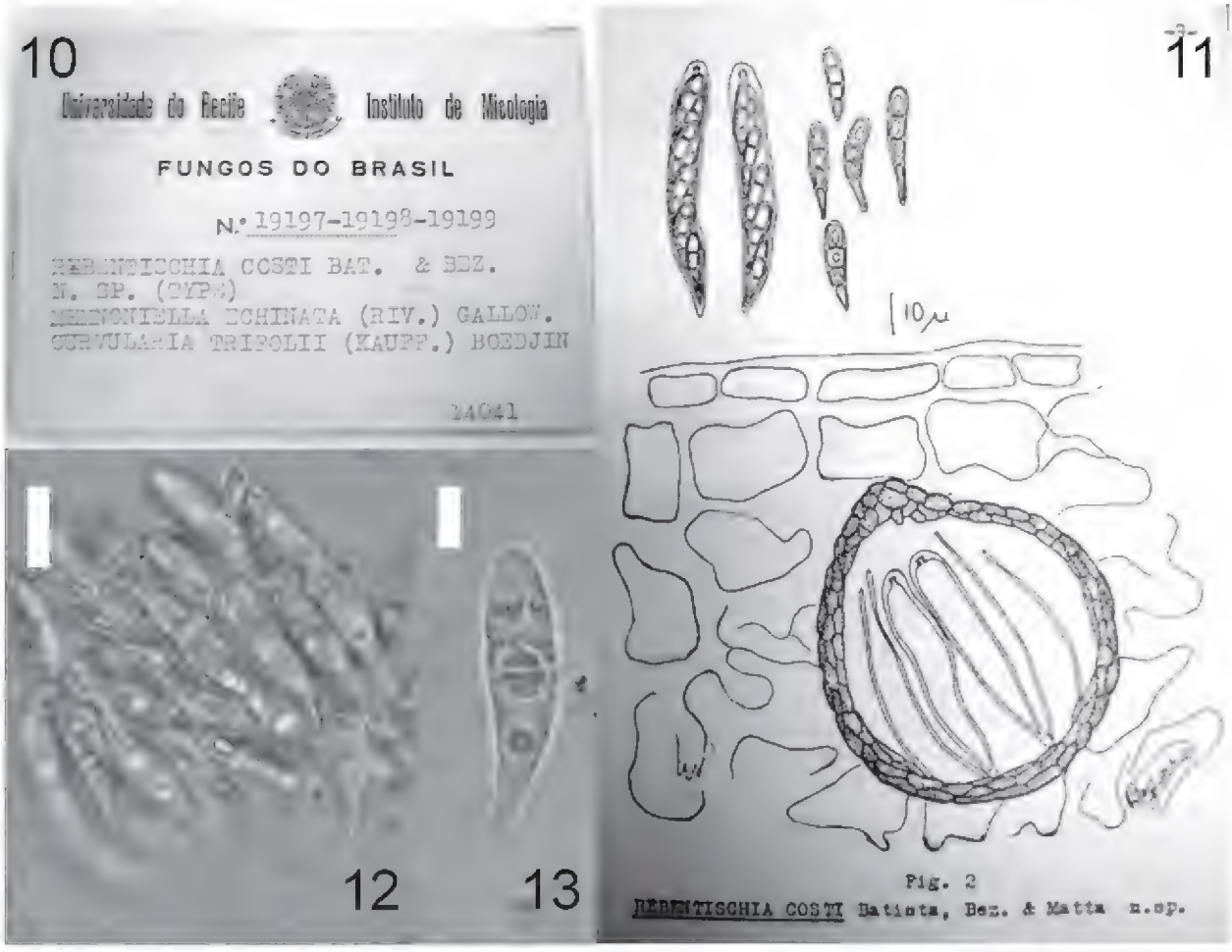
Rebentischia costi Bat., J.L. Bezerra & Matta Figures 10–13
Publ. Univ. Recife Inst. Micol. 385: 7. 1963.

Description based on Batista & Bezerra (1963) and our own observations: Ascomata epiphyllous, deeply immersed in necrotic spots, sparse, subglobose, 78–115 µm diam., dark brown. Peridium soft, lateral walls up to 10 µm wide, composed of cells disposed in textura angularis, 6.5–8 × 4–6.5 µm. Pseudoparaphyses hyaline, narrow, 1–1.5 µm diam. Asci bitunicate, claviform, 8-spored. Ascospores clavate, at first hyaline then olivaceus, smooth, 3-septate, 20–26 × 5–6 µm, basal cell hyaline ending in a setiform base, up to 6.5 µm long.

Distribution — Brazil.

Specimens examined — **BRAZIL.** Bahia: Ondina – Salvador. Jardim do IBB — on *Costus igneus* leaves, col. EAF da Matta, 16.V.1960 (*URM–CBB 19197*!)

Comments — The type material consists of one leaf with a few ascomata. We have seen only immature ascospores, identical to those described in Batista & Bezerra (1963). These ascospores and the overall description agree in morphology with other species of the genus, so we consider *R. costi* an authentic member of the genus *Rebentischia.*



Figures 10–13. *Rebentischia costi.* 10. Envelope of the holotype. 11. Original illustration given by Batista et al. (1963). 12–13. Ascospores (from URM-CBB 19197). Bars: 12–13= 10 µm.

Rebentischia costi was described from leaves of *Costus igneus* (= *Chamaecostus cuspidatus* (Nees. & Mart.) C.D. Specht & D.W. Stev., fide Specht & Stevenson 2006), a member of the *Costaceae (Zingiberales, Liliopsida)*. It differs from other species in *Rebentischia* by its smaller ascospores. It is also the only species of the genus described from a monocot.

Key to *Rebentischia* species

1a. Ascospores 3-septate, 20–26 × 5–6 µm. Basal cell up to 6.5 µm long.
On leaves of *Chamaecostus cuspidatus* (*Costaceae, Liliopsida*)..... *R. costi*

1b. Ascospores 4–5-septate 2

2a. Basal cell short, up to 4 µm long. Ascospores 4-septate, 23–25 × 8–10 µm.
On *Abies excelsa* (*Pinaceae*).....*R. abietis*

2b. Basal cell longer.....3

3a. Basal cell up to 15 µm long. Ascospores 4-septate, 17–30 × 4–7.5 µm.
On stems of shrubs and vines .....*R. unicaudata*

3b. Basal cell up to 24 µm long. Ascospores 4–5-septate, 22–40 × 6–10.5 µm.
On woody branches or trunks ..... *R. massalongii*

Acknowledgments

Leonor Costa Maia and Tatiana Gibertoni from URM Herbarium are warmly thanked for their help. The Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET: PIP 5660) and the Universidad Nacional del Sur (UNS: PGI) are thanked for financial support. We thank Amy Rossman and Julia Checa for acting as pre-submission reviewers and for their helpful comments.

Literature cited

Ahn Y, Shearer CA. 1999. Taxonomic revision of *Leptosphaeria vagabunda* and four infraspecific taxa. Mycologia 91: 684–693.

Barr ME. 1979. A classification of *Loculoascomycetes*. Mycologia 71: 935–957.

Barr ME. 1980. On the family *Tubeufiaceae (Pleosporales)*. Mycotaxon 12: 137–167.

Batista AC, Bezerra JL. 1963. Alguns ascomycetes hialofragmos de significação fitopatológica. Publ. Univ. Recife Inst. Micol. 385: 1–21.

Butin H, Peredo HL. 1986. Hongos parásitos en coníferas de América del Sur, con especial referencia a Chile. Biblioth. Mycol. 101: 1–100.

Farr DF, Rossman AY, Palm ME, McCray EB. Fungal Databases, Systematic Mycology and Microbiology Laboratory, ARS, USDA. [http://nt.ars-grin.gov/fungaldatabases/ (viewed online on June 2008)].

Gamundí IJ, Minter DW, Romero AI, Barrera VA, Giaiotti AL, Messuti MI, Stecconi M. 2004. Checklist of the Discomycetes (*Fungi*) of Patagonia, Tierra del Fuego and adjacent Antarctic areas. Darwiniana 42: 63–164.

Greslebin A, Hansen EM, Winton LM, Rajchenberg M. 2005. *Phytophthora* species from declining *Austrocedrus chilensis* forests in Patagonia, Argentina. Mycologia 97: 218–228.

Holmgren PK, Holmgren NH, Barnett LC. 1990. Index herbariorum: Part I: Herbaria of the World. 8th ed. Bronx, New York Botanical Garden.

Kodsueb R, Jeewon R, Vijaykrishna D, McKenzie EHC, Lumyong P, Lumyong S, Hyde KD. 2006. Systematic revision of *Tubeufiaceae* based on morphological and molecular data. Fungal Diversity 21: 105–130.

Mathiassen G, Økland H.R. 2007. Relative importance of host tree species and environmental gradients for epiphytic species composition, exemplified by pyrenomycetes s. lat. (*Ascomycota*) on *Salix* in central north Scandinavia. Ecography 30: 251–263.

Messuti MI, Lorenzo LE. 1997. A new species of *Hysterium* from Patagonia, Argentina. Mycol. Res. 101: 302–304.

Minter DW, Peredo López H. 2006. Fungi of Chile. [www.cybertruffle.org.uk/chilfung (website, version 1.00, viewed online on June 2008)].

Réblová M, Svrček M. 1997. New records of Pyrenomycetes of the Czech and Slovak republics. II. Some rare and interesting species of the orders *Dothideales* and *Sordariales*. Czech Mycol. 49: 207–227.

Rossman AY. 1987. The *Tubeufiaceae* and similar *Loculoascomycetes*. Mycological Papers 157: 1–71.

Specht CD, Stevenson DW. 2006. A new phylogeny-based generic classification of *Costaceae* (Zingiberales). Taxon 55: 153–163.

Tsui CKM, Sivichai S, Berbee ML. 2006. Molecular systematic of *Helicoma*, *Helicomyces* and *Helicosporium* and their teleomorphs inferred from rDNA sequences. Mycologia 98: 94–104.